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Seminar in Applied Theory and Research One

Assignment one

9/5/11

**Action Research**

Action research is known by many other names, including participatory research, emancipatory research, action learning, and contextual action research, but all of these are variations of a single theme. Simply put, action research is “learning by doing.” A group of people identify a problem, do something to resolve it, see how successful their efforts were, and if not satisfied, try again. While this is the essence of the approach, there are other key attributes of action research that differentiate it from common problem-solving approaches that people engage in every day. A more succinct definition is:

*Action research aims to contribute both to the practical concerns of people in an immediate problematic situation and to further the goals of social science simultaneously. Thus, there is a dual commitment to study a system and concurrently to collaborate with members of the system in changing it in what is together regarded as a desirable direction. Accomplishing this twin goal requires the active collaboration of researcher and client, and thus it stresses the importance of co-learning as a primary aspect of the research process.*

What separates this type of research from general professional practices, consulting, or daily problem solving is the emphasis on scientific study, which is to say the researcher studies the problem systematically and ensures the intervention is informed by theoretical considerations. Much of the researcher’s time is spent on refining the methodical tools to suit the exigencies of the situation, and on collecting, analyzing, and presenting data in an ongoing, cyclical course.

Several attributes separate action research from other types of research. Primary is its focus on turning the people involved into researchers, too. People learn best, and more willingly apply what they have learned, when they do it themselves. It also has a social dimension- the research takes place in real world situations, and aims to solve real problems. Finally, the initiating researcher, in contrast to other disciplines, makes no attempt to remain objective, but openly acknowledges their bias to other participants.

**Defining the Problem**

American elementary school students lag far behind their counterparts in similarly developed nations in their math skills. They are far less proficient at grasping both basic and advanced mathematical concepts and their applications. Part of the problem is that teachers themselves are not adequately versed in the most efficient strategies for teaching math and/or have a poor understanding of math. In order to become viable citizens in a global community, interventions are needed to prepare students for work in a competitive, technology fueled economy. This problem has been studied extensively and is very researchable.

**Prior Research**

1. Trends in International Mathematics and Science Study (TIMSS)

2. National Commission on Mathematics and Science Teaching for the 21st Century. 2000. Before It's Too Late. Washington, DC: U.S. Department of Education.

**Pros and Cons**

1. Pro: This research has the potential to improve math performance for elementary students.

2. Cons: Math performance varies within the US and is influenced by the intersection of many factors, including race and socioeconomic status, thereby complicating the research process.

**Current Instructional Strategies**

1. Current instructional strategies forego traditional, efficient algorithms in favor of more complicated methods of teaching math including the “lattice method” for doing multiplication. <http://mathworld.wolfram.com/LatticeMethod.html>

2. Current instructional strategies also do not employ inquiry based learning, but rather involve the teacher showing one way of solving a problem.

**Practitioners/Theorists**

1. M.J. McDermott

2. Dr. Phillip Reid

**Proposed intervention (Independent Variable):**

The use of hands-on manipulative tools as an instrument of inquiry based learning in a mathematics elementary classroom is one possible intervention. Another intervention would be a return to the use of traditional algorithms (i.e. long division) in solving fundamental math problems.

**Measuring/Constructing the intervention (Dependent Variable):**

The utility of the proposed intervention(s) will be measured through student performance on standardized exams in math, problem solving, and logic.